EMPTY CONTAINERS
PROCESS KNOWLEDGE EVALUATION FORM

This form is to be completed and approved prior to waste being packaged

PKE Number _____

Section I: To be completed by generator

General Information:

1. Building and room of waste generation _____
2. Description of waste (Example: 5 gallon poly carboys, 55 gallon metal drums):

   _____

   ❒ Original requisitions attached.
3. Describe process / activity that generated the waste (Example: Drums from waste that was treated):

   _____
4. Containers last held? (Example: uranium feed stock, aqueous liquid contaminated with TCE and Pu):

   _____

   _____ ❒ See attached requisitions or list

   The containers are from B514? ❒ Yes ❒ No, If yes, the containers were triple rinsed? ❒ Yes ❒ No

Waste Evaluation:

5. Does the waste contain any of the following:

   Verified by: *VI=Visual Inspection; S&A=Sampling and Analysis; PK=Process Knowledge,* ***When PK is checked, it must be supported by Visual Inspection (VI) or an explanation must be documented. (Example: Inventory controls, none used in process, or reference supporting documentation, if not already described above, (e.g., logbooks, drawings).***

   a. Grease / oil ❒ Yes ❒ No ❒ VI ❒ S&A ❒ PK _____
   b. Hazardous residues ❒ Yes ❒ No ❒ VI ❒ S&A ❒ PK _____
      If yes, what are the residues _____
   c. Entrapped Liquids ❒ Yes ❒ No ❒ VI ❒ PK _____
      If yes, is it less than 0.5% by volume of the waste? ❒ Yes ❒ No
      What is the liquid? _____
   d. Particulates [> 1% by weight of < 10-micrometer diameter (flour) or > 15% by weight of < 200-micrometer diameter (sand)] ❒ Yes ❒ No ❒ VI ❒ S&A ❒ PK _____
   e. Compressed gases ❒ Yes ❒ No ❒ VI ❒ PK _____
   f. Etiological agents ❒ Yes ❒ No ❒ VI ❒ S&A ❒ PK _____
   g. Chelating agents ❒ Yes ❒ No ❒ VI ❒ S&A ❒ PK _____
      If yes, is the concentration less than 1% by weight? ❒ Yes ❒ No
   h. PCBs (capacitors, etc.) ❒ Yes ❒ No ❒ VI ❒ S&A ❒ PK _____
   i. Explosives ❒ Yes ❒ No ❒ VI ❒ S&A ❒ PK _____
   j. Pyrophorics ❒ Yes ❒ No ❒ VI ❒ S&A ❒ PK _____
   k. Asbestos ❒ Yes ❒ No ❒ VI ❒ S&A ❒ PK _____
      If yes, is it ❒ friable ❒ non-friable. If friable, please segregate.
   l. Batteries ❒ Yes ❒ No ❒ VI ❒ PK _____

When Sampling and Analysis is used, attach results.

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PROCESS KNOWLEDGE EVALUATION FORM

PKE Number _____

Section I, continued

Radiological Characterization: ***There must be information available to support the below information. All determinations must be reproducible.***

6. Radionuclides present in the waste and the activity for each nuclide:

Radionuclide	Activity (Ci)	Radionuclide	Activity (Ci)
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

❒ See attached sheet

7. Determination of radionuclides:

❒ Process Knowledge: Explain: (Example: Inventory Controls) _____

_____

❒ Radioanalysis (attach results) ❒ Radiological swipe (attach results)

❒ Gamma Spectroscopy (attach results) ❒ Alpha Spectroscopy (attach results)

8. Determination of Activity: ***Except for AVLIS Method, documentation must be attached describing all calculations and assumptions used to obtain the activity values.***

❒ Gamma Spectroscopy ❒ Alpha Spectroscopy

❒ Mass Balance ❒ Mass to Curie Conversion

❒ High Sensitivity Neutron Instrument ❒ Tritium Off Gas Measurement

❒ AVLIS Method ❒ Other (explain) _____

❒ Liquid Scintillation _____

List procedure(s) followed: _____

❒ DPM or CPM to Curie Survey: Instrument _____ Probe _____
Attach memo describing methodology used.

Generator (please print) _____ extension _____

Signature _____ Date _____

Section II. HWM REVIEW AND VALIDATION

1. The waste matches the description above. ❒ Yes ❒ No
2. Section I is complete. ❒ Yes ❒ No

_____

Completed by: Print Signature Date

EMPTY CONTAINER
PROCESS KNOWLEDGE EVALUATION FORM

Section III. ENVIRONMENTAL ANALYST REVIEW

When the generator is using process knowledge to characterize his waste the EA should review the supporting documentation. If no documentation is reviewed, explain why, (e.g., visually examined the waste, documented any interviews with the generator).

1. Based on the information provided on this PKE Form, the waste is free of regulated hazardous materials. ❒ Yes ❒ No
2. List the documentation that was reviewed to support the characterization of this waste stream.

_____

_____

❒ See attached list of additional support documentation that was reviewed.

❒ Waste characterization memo attached.

❒ No documentation was reviewed: Explain why: _____

_____

_____

EA Print Signature Date

Section IV. HEALTH PHYSICIST REVIEW

1. Based on the information provided on this PKE Form, the waste has been properly characterized as to its radiological content. ❒ Yes ❒ No

   ❒ See attached memo for additional information.
2. The anticipated range of error associated with the method described in Section I, 8 is

   _____.
3. Method is reproducible. ❒ Yes ❒ No Method is representative. ❒ Yes ❒ No

_____

HP Print Signature Date

Section V. WASTE CERTIFICATION ENGINEER REVIEW

Radiological Characterization:

1. The radionuclides described above are identified on the Waste Stream Characterization Data Sheet and are within the ranges listed. ❒ Yes ❒ NA (Waste is not destined for NTS)
2. The radionuclides described above are performance assessment critical isotopes. ❒ Yes ❒ No ❒ NA
   ❒ NVO PA ❒ Hanford PA ❒ Envirocare
3. Are there decay chain isotopes that require reporting? ❒ Yes ❒ No
   If yes, list the Reportable Isotopes. _____

   _____
4. Does the waste contain fissile material? ❒ Yes ❒ No

   If yes, are there criticality safety requirements? ❒ Yes ❒ No

   If yes, please attach safety requirements.
5. Are the quantity and type of radionuclides present sufficient to generate nuclear heating? ❒ Yes ❒ No
   If yes, list expected wattage. _____

_____

WCE Print Signature Date

EMPTY CONTAINER
PROCESS KNOWLEDGE EVALUATION FORM

PKE Number _____

WASTE CERTIFICATION ENGINEER REVIEW continued

General Review:

1. Sections I, II, III, and IV have been completed by qualified personnel.
2. ❒ The above sections are properly completed.
3. ❒ The above sections illustrate that the waste is acceptable.

   ❒ The above sections indicate that the waste may not be acceptable for shipment to the NTS.

   ❒ The waste was segregated and identified for further evaluation.

   Upon further evaluation, the waste was found to be:

   ❒ acceptable, and can be packaged for shipment to NTS.

   ❒ unacceptable, and shall remain segregated.
4. NCAR Issued, ❒ Yes ❒ No NCAR Number _____
5. Surveillance conducted: ❒ Yes Surveillance Number: _____
6 Critical equipment being utilized to process waste is as follows: (e.g. scales, torque wrenches)

   _____

❒ See attached list Critical equipment has been entered into the database. _____ Initials

_____

WCE Print Signature Date

Section VI. WASTE CERTIFICATION OFFICIAL REVIEW

1. I have reviewed the information on this form and certify that the subject waste is not mixed waste and meets the requirements of NVO-325 (current version). ❒ NA (Waste is not destined for NTS)
2. The waste is acceptable to be packaged for shipment to ❒ NTS ❒ Hanford ❒ Envirocare.

_____

WCO Print Signature Date

Section VII. COMPLIANCE REQUIREMENTS

Packaging:

Waste will be packaged in accordance with:

❒ Packaging Instructions Number: _____

❒ Facility Specific Handling and Packaging Procedure.

Procedure: _____

Training:

Required Training. EP0006 and ❒ EP0110 or ❒ OJT

Training records are on file for the generator. ❒ Yes ❒ No,

If no, the generator was given OJT. ❒ Yes Initials _____

Waste Characterization Summary:

The appropriate Waste Characterization Summary Form has been updated in accordance with WCP-15.

❒ Yes Initials _____

_____

WCE Print Signature Date